APPENDIX B
MITIGATION MEASURES, MONITORING AND REPORTING PROGRAM FOR THE 2004 FISHERIES RESTORATION GRANT PROGRAM

MITIGATION

I. AESTHETICS

No specific mitigation measures are required to protect aesthetics.

II. AGRICULTURE RESOURCES

No specific mitigation measures are required to protect agricultural resources.

III. AIR QUALITY

No specific mitigation measures are required to protect air quality.

IV. BIOLOGICAL RESOURCES

General Measures for Protection of Biological Resources

1) Timing. To avoid impacts to aquatic habitat the activities carried out in the restoration program typically occur during the summer dry season.

   a) Work around streams will be confined to the period of July 1 through November 1 or the first rainfall. This is to take advantage of low stream flows and avoids the spawning and egg/alevin incubation period of salmon and steelhead.

   b) Upslope work generally occurs during the same period as stream work. Road decommissioning and other sediment reduction activities are dependent on soil moisture content. Work may be delayed at some sites after July 1 to allow soils to dry out adequately; equipment access and effectiveness is inhibited by wet conditions.

   c) The permissible work window for individual work sites will be further constrained as necessary to avoid the nesting or breeding seasons of birds and terrestrial animals. At most sites with potential for raptor (including northern spotted owls) and migratory bird nesting, if work is conditioned to start after July 31, potential impacts will be avoided and no surveys will be required. For work sites that might contain nesting marbled murrelets, the starting date will be September 15 in the absence of surveys. The work window at individual work sites could be advanced if surveys determine that nesting birds will not be impacted.

d) For restoration work that could affect swallow nesting habitat (such as removal of culverts showing evidence of past swallow nesting), construction will occur after August 31 to avoid the swallow nesting period. Alternatively, the suitable bridge nesting habitat will be netted before initiation of the breeding season to prevent nesting. Netting must be installed before any nesting activity begins, generally prior to March 1. Swallows must be excluded from areas where construction activities cause nest damage or abandonment.

e) Planting of seedlings shall begin after December 1, or when sufficient rainfall has occurred to ensure the best chance of survival of the seedlings, but in no case after April 1.

2) During all activities at project work sites, all trash that may attract predators shall be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris shall be removed from work areas.

3) Staging/storage areas for equipment, materials, fuels, lubricants, and solvents, will be located outside of the stream's high water channel and associated riparian area. Stationary equipment such as motors, pumps, generators, compressors, and welders located within the dry portion of the stream channel or adjacent to the stream, will be positioned over drip-pans. Vehicles will be moved out of the normal high water area of the stream prior to refueling and lubricating. The contractor shall ensure that contamination of habitat does not occur during such operations. Prior to the onset of work, DFG shall ensure that the contractor has prepared a plan to allow a prompt and effective response to any accidental spills. All workers shall be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.

4) The contractor shall ensure that the spread or introduction of invasive exotic plants shall be avoided to the maximum extent possible. When practicable, invasive exotic plants at the work site shall be removed.

5) The number of access routes, number and size of staging areas, and the total area of the work site activity shall be limited to the minimum necessary to complete the restoration action.

6) Any equipment work within the stream channel shall be performed in isolation from the flowing stream. If there is any flow when the work is done, the contractor shall construct coffer dams upstream and downstream of the excavation site and divert all flow from upstream of the upstream dam to downstream of the downstream dam. The coffer dams may be constructed with clean river gravel or sand bags, and may be sealed with sheet plastic. Sand bags and any sheet plastic shall be removed from the stream upon

project completion. Clean river gravel may be left in the stream, but the coffer dams must be breached to return the stream flow to its natural channel.

7) For minor actions, where the disturbance to construct coffer dams to isolate the work site would be greater than to complete the action (for example, placement of a single boulder cluster), then measures will be put in place immediately downstream of the work site to capture suspended sediment. This may include installation of silt catchment fences across the stream, or placement of a filter berm of clean river gravel. Silt fences and other non-native materials will be removed from the stream following completion of the activity. Gravel berms may be left in place after breaching, provided they do not impede the stream flow.

8) Any equipment entering the active stream (for example, in the process of installing a coffer dam) shall be preceded by an individual on foot to displace wildlife and prevent them from being crushed.

9) If any wildlife is encountered during the course of construction, said wildlife shall be allowed to leave the construction area unharmed, and shall be flushed, hazed, or herded in a safe direction away from the project site.

10) Any red tree vole nests encountered at a work site will be flagged and avoided during construction.

11) For any work sites containing western pond turtles, foothill yellow-legged frogs or tailed frogs, the contractor shall provide to the DFG contract manager for review and approval, a list of the exclusion measures that will be used at their work site to prevent take or injury to any individual pond turtles or frogs that could occur on the site. The contractor shall ensure that the approved exclusion measures are in place prior to construction. Any turtles or frogs found within the exclusion zone shall be moved to a safe location upstream or downstream of the work site, prior to construction.

12) All habitat improvements shall be done in accordance with techniques in the "*California Salmonid Stream Habitat Restoration Manual.*" The most current version of the manual is available at: http://www.dfg.ca.gov/habitats.

Specific Measures for Endangered, Rare, or Threatened Species That Could Occur at Specific Work Sites

Rare Plants

The work sites for the 2004 grants projects are within the range of a variety of rare plant species. The plant species found on a State or Federal special status list that might be associated with the 2004 grants projects, was determined from a search of DFG's Natural Diversity Database. Because of the large number of widely scattered work sites proposed, it is not feasible to survey individual work sites in advance and still be able to implement the restoration projects, due to time limits on the availability of restoration funds. Lists of special status plant species that might occur at individual work sites are presented in Appendix A. Past experience with grants projects from previous years has shown that the potential for adverse impacts on rare plants at salmonid restoration work sites is very low. Few sites surveyed for rare plants between 1999 and 2003 were found to have rare plant colonies; disturbance of rare plants was avoided in all cases. In order to avoid impacts to rare plants during the 2004 grants projects, the following mitigation measures will be implemented:

1) DFG will survey all work sites for rare plants prior to any ground disturbing activities. Rare plant surveys will be conducted following the "Guidelines for Assessing the Effects of Proposed Developments on Rare and Endangered Plants and Plant Communities" (DFG, 2000). These guidelines are available on the web at: http://www.dfg.ca.gov/hcpb/species/stds_gdl/survmonitr.shtml.

2) If any special status plant species are identified at a work site, DFG will require one or more of the following protective measures to be implemented before work can proceed:

   a) Fencing to prevent accidental disturbance of rare plants during construction,

   b) On-site monitoring by a qualified biologist during construction to assure that rare plants are not disturbed, and

   c) Redesign of proposed work to avoid disturbance of rare plants.

3) If it becomes impossible to implement the project at a work site without potentially significant impacts to rare plants, then activity at that work site will be discontinued.

4) DFG shall ensure that the contractor or responsible party is aware of these site-specific conditions, and will inspect the work site before, during, and after completion of the action item.

California Freshwater Shrimp (*Syncaris pacifica*)

Of the 93 work sites proposed as part of the 2004 grants program, 19 occur within the range of California freshwater shrimp (CFS) (Lagunitas Cr. Sediment Control, Redwood Cr. Sediment Control MMWD Lands, Redwood Cr. Sediment Control within Mt. Tamalpais State Park, San Geronimo Cr. Bank Stabilization, Walker Cr. Watershed Enhancement Program 2, Eticuera Cr. Bioengineering, Cloud Ridge Road Upslope Sediment Reduction, Dutch Bill Cr. Road Erosion Prevention, Dutch Bill Cr. Fish-Way Access, Green Valley Cr. Coho Enhancement, Hulbert Cr. Pool Enhancement, Lower Austin Cr. Migration Improvement, Old Cazadero Road Erosion Control, Salmon Cr. Pool Habitat, SSCRCD Carriger Cr. Habitat Barrier Modification, Sweetwater Springs Passage Improvement, Upper Wine Cr. Passage Improvement, Willow Cr. Watershed Sediment Reduction, Willow Cr. Road Erosion Control) (Appendix A). The range of the CFS includes Marin, Napa, and Sonoma counties, excluding the Gualala River watershed. Eight of these projects (Lagunitas Cr. Sediment Control, Redwood Cr. Sediment Control MMWD Lands, Redwood Cr. Sediment Control within Mt. Tamalpais State Park, Cloud Ridge Road Upslope Sediment Reduction, Dutch Bill Cr. Road Erosion Prevention, Old Cazadero Road Erosion Control, Willow Cr. Watershed Sediment Reduction, Willow Cr. Road Erosion Control) have no potential to impact CFS because they involve no instream work. Based on the nature of the habitat at the other 11 sites, and their location in their watersheds, it is possible that CFS could occur at those sites. Therefore, the potential for impacts to CFS will be mitigated by application of the following measures in streams where CFS are known to inhabit:

1) Qualified DFG personnel will survey each site for CFS before allowing work to proceed and where appropriate, prior to issuance of a Streambed Alteration Agreement. In site locations where CFS are present, DFG will require the contractor to implement the mitigation measures listed below. If necessary mitigation measures cannot be implemented or the project actions proposed at a specific work site cannot be modified to prevent or avoid potential impacts to CFS or their habitat, then activity at that work site will be discontinued.

   a. Equipment work will be performed only in riffle, shallow run, or dry habitats, avoiding low velocity pool and run habitats occupied by CFS, an endangered species. "Shallow" run habitat is defined as a run with a maximum water depth, at any point, less than 12 inches, and without undercut banks or vegetation overhanging into the water.
   b. Hand placement of logs or rocks will be permitted in pool or run habitat in stream reaches where CFS are known to be present only if the placement will not adversely affect CFS and their habitat.
   c. Care shall be taken during placement or movement of materials in the stream to prevent any damage to undercut stream banks and to minimize

damage to any streamside vegetation. Streamside vegetation overhanging into pools or runs shall not be modified.

d. No log or rock weirs (including vortex rock weirs) shall be constructed that would span the full width of the low flow stream channel. Vegetation shall be incorporated with any structures involving rocks or logs to enhance migration potential for CFS,
e. DFG must be notified at least one week in advance of the date on which work will start in the stream, so that a qualified DFG biologist can monitor activities at the work site. All work in the stream shall be stopped immediately if it is determined by DFG that the work has the potential to adversely impact on the CFS or its habitat. Work shall not recommence until DFG is satisfied that there will be no impact on the CFS.
f. The contractor is required to notify the U. S. Fish and Wildlife Service (USFWS) four weeks before work is scheduled to begin at the site, and provide access for USFWS to inspect the work if requested. The contractor will implement any additional mitigation requested by USFWS.

Coho Salmon (*Oncorhynchus kisutch*), Chinook Salmon (*Oncorhynchus tshawytscha*), Steelhead (*Oncorhynchus mykiss*), and Coast Cutthroat Trout (*Oncorhynchus clarki clarki*)

While all of the work proposed under this program will enhance habitat for one or more of these species, 69 of the 93 work sites proposed as part of the 2004 grants program will involve instream work in their habitat (Appendix A). In order to avoid any potential for negative impacts to these species the following measures will be implemented:

1) Project work within the wetted stream shall be limited to the period between July 1 and November 1, or the first significant fall rainfall. This is to take advantage of low stream flows and to avoid the spawning and egg/alevin incubation period of salmon and steelhead. Whenever possible, the work period at individual sites shall be further limited to entirely avoid periods when salmonids are present (for example, in a seasonal creek, work will be confined to the period when the stream is dry).

2) No heavy equipment shall operate in the live stream, except as may be necessary to construct coffer dams to divert stream flow and isolate the work site.

3) Work must be performed in isolation from the flowing stream. If there is any flow when the work is done, the operator shall construct coffer dams upstream and downstream of the excavation site and divert all flow from upstream of the upstream dam to downstream of the downstream dam. The coffer dams may be constructed with clean river gravel or sand bags, and may be sealed with sheet plastic. Sand bags and any sheet plastic shall be removed from the stream upon project completion. Clean river gravel may be

left in the stream, but the coffer dams must be breached to return the stream flow to its natural channel.

4) For minor actions, where the disturbance to construct coffer dams to isolate the work site would be greater than to complete the action (for example, placement of a single boulder cluster), measures will be put in place immediately downstream of the work site to capture suspended sediment. This may include installation of silt catchment fences across the stream, or placement of filter berm of clean river gravel. Silt fences and other non-native materials will be removed from the stream following completion of the activity. Gravel berms may be left in place after breaching, provided they do not impede the stream flow.

5) The channel shall not be excavated for the purpose of isolating the workspace from flowing water.

6) The operator shall obtain a biologist, with all necessary State and Federal permits, to rescue any fish within work sites prior to dewatering. Rescued fish shall be moved to the nearest appropriate site on the stream. A record shall be maintained of all fish rescued and moved, and the record shall be provided to DFG.

7) If it is necessary to divert flow around the work site, either by pump or by gravity flow, the suction end of the intake pipe shall be fitted with fish screens meeting DFG and NMFS criteria to prevent entrainment or impingement of small fish. Any turbid water pumped from the work site itself to maintain it in a dewatered state shall be disposed of in an upland location where it will not drain directly into any stream channel.

8) Any disturbed banks shall be fully restored upon completion of construction. Revegetation shall be done using native species. Planting techniques can include seed casting, hydroseeding, or live planting methods using the techniques in the latest version of the *California Salmonid Stream Habitat Restoration Manual.*

9) Suitable large woody debris removed from fish passage barriers that is not used for habitat enhancement, shall be left within the riparian zone so as to provide a source for future recruitment of wood into the stream.

10) If for some reason these mitigation measures cannot be implemented, or the project actions proposed at a specific work site cannot be modified to prevent or avoid potential impacts to anadromous salmonids or their habitat, then activity at that work site will be discontinued.

California Red-Legged Frog (*Rana aurora draytonii*)

Fourteen of the work sites proposed as part of the 2004 grants program are within potential habitat for the California red-legged frogs (CRLF) (Appendix A). Activities proposed for the 14 sites (Redwood Cr. Sediment Control MMWD Lands, Redwood Cr. Sediment Control within Mt. Tamalpais State Park, Walker Cr. Watershed Enhancement Program 2, Burton Bridge Barrier Removal, Dairy Cr. Upslope Erosion Control, Fiscalini Bank Stabilization, Wolff Vineyards Bank Restoration, Pescadero Cr. Park Complex, Tarwater Cr. Sediment Reduction, Alpine Cr. Fish Ladder Maintenance, El Capitan Arizona Crossing Replacement, Lower Austin Cr. Migration Improvement, Salmon Cr. Pool Habitat, Willow Cr. Watershed Sediment Reduction) will not remove or degrade CRLF habitat; however, precautions will be required to avoid the potential for take of CRLF while using heavy equipment at these sites. To avoid this potential impact, the following mitigation measures will be implemented:

1) A biologist approved by the USFWS shall survey the work site at least two weeks before the onset of activities. If CRLF, tadpoles, or eggs are found, the approved biologist shall contact the USFWS for approval to move the animals out of the work site. If the USFWS approves moving animals, the approved biologist shall be allowed sufficient time to move CRLF from the work site before work activities begin. Only USFWS-approved biologists shall participate in the capture, handling, and monitoring of CRLF. If the USFWS does not approve moving CRLF out of the work area, the DFG will drop activities at the work site from the project.

2) Before any construction activities begin at a work site that may contain CRLF, a USFWS-approved biologist shall conduct a training session for all construction personnel. At a minimum the training shall include a description of the CRLF and its habitat, the importance of the CRLF and its habitat, the general measures that are being implemented to conserve the CRLF as they relate to the work site, and the work site boundaries where construction may occur.

3) At any work site that may contain CRLF, all fueling and maintenance of vehicles, other equipment, and staging areas shall occur at least 20 meters from any riparian habitat or water body. The contractor shall ensure contamination of habitat does not occur during such operations. Prior to the onset of work, DFG shall ensure that the contractor has prepared a plan to allow a prompt and effective response to any accidental spills. All workers shall be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.

4) A USFWS-approved biologist shall be present at the work site until such time as all removal of CRLF, instruction of workers, and habitat disturbance associated with the restoration project have been completed. The USFWS-

approved biologist shall have the authority to halt any action that might result in the loss of any CRLF or its habitat. If work is stopped, the USFWS-approved biologist shall immediately notify DFG and the USFWS.

5) Ground disturbing activities in potential CRLF habitat shall be restricted to the period between July 1 and October 15.

6) If a work site is temporarily dewatered by pumping, intakes shall be completely screened with wire mesh not larger than five millimeters to prevent CRLF from entering the pump system. Water shall be released or pumped downstream, at an appropriate rate, to maintain downstream flows during construction. Upon completion of construction activities, any barriers to flow shall be removed in a manner that would allow flow with the least disturbance to the substrate.

7) A USFWS-approved biologist shall permanently remove from within the project work site, any individuals of exotic species, such as bullfrogs, centrarchid fishes, and non-native crayfish, to the maximum extent possible. The contractor shall have the responsibility that such removals are done in compliance with the California Department of Fish and Game Code.

8) If for some reason these mitigation measures cannot be implemented or the project actions proposed at a specific work site cannot be modified to prevent or avoid potential impacts to CRLF or their habitat, then activity at that work site will be discontinued.

Least Bell's Vireo (*Vireo bellii pusillus*)

Of the 93 work sites proposed as part of the 2004 grants program, none could potentially affect suitable habitat for the Least Bell's Vireo (Appendix A). None of the activities proposed for these sites will significantly degrade existing vireo habitat, but the potential exists for the noise from heavy equipment work and the harvesting of willow branches for revegetation at these sites to disrupt vireo nesting. To avoid this potential impact, the following mitigation measures will be implemented:

1) Work shall not begin within one quarter mile of any site with known or potential habitat for the Least Bell's Vireo until after September 15.

2) Harvest of willow branches at any site with potential habitat for the Least Bell's Vireo will not occur between March 1 and September 15.

3) The work window at individual work sites may be modified, if protocol surveys determine that nesting birds do not occur within 0.25 miles of the site during the breeding season.

4) The DFG shall ensure that the contractor or responsible party is aware of this site-specific condition, and will inspect the work site before, during, and after completion of the action item.

5) If for some reason these mitigation measures cannot be implemented or the project actions proposed at a specific work site cannot be modified to prevent or avoid potential impacts to Least Bell's Vireo or their habitat, then activity at that work site will be discontinued.

Marbled Murrelet (*Brachyrampus marmoratus*)

The marbled murrelet is listed as endangered under CESA and threatened under ESA. Activities to protect and restore habitat will not remove or degrade suitable habitat for marbled murrelets, however nesting birds could be disturbed by the noise from heavy equipment required for projects such as culvert removal or placement of large woody debris.

Of the 93 work sites proposed as part of the 2004 grants program, 12 are in potentially suitable habitat for the marbled murrelet (Morrison Cr. Fish Passage Improvement, Peacock Cr. LDA Modification, Salt Cr. Riparian Restoration, Bull Cr. Salmonid Restoration and Riparian Revegetation, Grizzly Cr. Tributary Stream Restoration, Rex's Wing Dam Enhancement, South Humboldt Bay Coastal Resources Protection, Yager Cr. Channel Restoration, Alpine Cr. Fish Ladder Maintenance, Pescadero Cr. Park Complex, Tarwater Cr. Sediment Reduction, Indian Cr. Sediment Control) (Appendix A). None of the activities proposed for these sites will remove or degrade marbled murrelet habitat, but the potential exists for noise from heavy equipment work at these sites to disrupt marbled murrelet nesting. To avoid this potential impact, the following mitigation measures will be implemented:

1) Adverse effects can be avoided by limiting heavy equipment work within 0.25 mile of marbled murrelet habitat to the period between September 16 and March 23.

2) Work shall not begin within 0.25 mile of any site with occupied or unsurveyed suitable marbled murrelet habitat between March 24 and September 15.

3) The work window at individual work sites near suitable habitat may be modified, if protocol surveys determine that habitat quality is low and occupancy is very unlikely (*may affect but not likely to adversely affect*).

4) If for some reason these mitigation measures cannot be implemented or the project actions proposed at a specific work site cannot be modified to prevent or avoid potential adverse effects to marbled murrelet or their habitat, then activity at that work site will be discontinued.

Northern Spotted Owl (*Strix occidentalis caurina*)

The northern spotted owl is listed as threatened under ESA. Restoration activities should not alter habitat for northern spotted owls, however nesting birds could be disturbed by the noise from heavy equipment during projects such as culvert removal or placement of large woody debris. Disturbance can be avoided by limiting heavy equipment work within 0.25 miles of suitable spotted owl habitat to the period between August 1 and January 31.

Of the 93 work sites proposed as part of the 2004 grants program, 55 are in potentially suitable habitat for the northern spotted owl (Appendix A). None of the activities will remove, downgrade, or degrade spotted owl habitat, but the potential exists for heavy equipment work at these sites to disturb spotted owl nesting. To avoid this potential effect, the following mitigation measures will be implemented:

1) Work at any site within 0.25 miles of suitable habitat for the northern spotted owl will not occur from February 1 to July 31.

2) The work window at individual work sites may be advanced prior to July 31, if protocol surveys determine that suitable habitat is unoccupied.

3) If for some reason these mitigation measures cannot be implemented or the project actions proposed at a specific work site cannot be modified to prevent or avoid potential impacts to northern spotted owls or their habitat, then activity at that work site will be discontinued and CDFG will reinitiate consultation with FWS.

Willow Flycatcher (*Empidonax traillii*),

Of the 93 work sites proposed as part of the 2004 grants program, one could potentially affect suitable habitat for the willow flycatcher by the harvesting of willow branches for riparian planting and construction of live willow mattresses and live willow walls (Bull Cr. Salmonid Restoration and Riparian Revegetation) (Appendix A). None of the activities proposed for these sites will significantly degrade existing willow flycatcher habitat, but the potential exists for the noise from heavy equipment work or harvesting of revegetation material at these sites to disrupt willow flycatcher nesting. To avoid this potential impact, the following mitigation measures will be implemented:

1) Heavy equipment work shall not begin within one quarter mile of any site with known or potential habitat for the willow flycatcher until after August 31. Heavy equipment work shall not begin within one quarter mile of any site with known or potential habitat for the southwestern willow flycatcher until after September 15.

2) Harvest of willow branches at any site with potential habitat for the willow flycatcher will not occur between May 1 and August 31. Harvest of willow branches at any site with potential habitat for the southwestern willow flycatcher will not occur between May 1 and September 15.

3) The work window at individual work sites may be modified, if protocol surveys determine that nesting birds do not occur within 0.25 miles of the site during the breeding season.

4) No more than 1/3 of any willow plant shall be harvested annually. Care shall be taken during harvest not to trample or over harvest the willow sources.

5) DFG shall ensure that the contractor or responsible party is aware of this site-specific condition, and will inspect the work site before, during, and after completion of the action item.

6) If for some reason these mitigation measures cannot be implemented or the project actions proposed at a specific work site cannot be modified to prevent or avoid potential impacts to willow flycatcher or their habitat, then activity at that work site will be discontinued.

Point Arena Mountain Beaver (*Aplodontia rufa nigra*)

Of the 93 projects proposed as part of the 2004 grants program, one occurs within the range of the PAMB (Appendix A). Of those projects, 92 have no potential to adversely affect PAMB because no work will occur in any habitat used by PAMB. The other one project within the range of the PAMB, (Garcia River-Lower Mainstem Bank Stabilization), has the potential to adversely impact PAMB because work will occur in or near habitats potentially used by PAMB. To avoid potential impacts to PAMB from these projects, the following mitigation measures will be implemented:

1) Qualified DFG personnel will survey each work site for PAMB. Qualification of surveyors, survey protocols, and reporting will conform to USFWS's *Draft Guidelines for Project-Related Habitat Assessments and Surveys for Point Arena Mountain Beaver*. Per the *Guidelines*, if the activity status of a burrow is in doubt, or if there is unsurveyed potential habitat, PAMB active presence will be assumed.

2) For work sites where PAMB active presence is confirmed or assumed, all protective measures prescribed by USFWS's *Draft Point Arena Mountain Beaver Standard Protection Measures for No-Take Determinations* will be followed, through issuance of a Streambed Alteration Agreement and/or directives to the contractor by the DFG Contract Manager. The protective measures most pertinent to DFG salmonid habitat improvement projects include:

a. No operation of noise generating equipment (e.g. chainsaws) within 100 feet of active burrows during the breeding season (December 15 – June 30).
b. No operation of mechanical equipment (e.g backhoes, excavators) within 100 feet of active burrows during the breeding season (December 15 – June 30), and within 50 feet the remainder of the year.
c. No ground disturbance (e.g. dumping of boulders) within 500 feet of active burrows during breeding season, and within 100 feet the remainder of the year. No severe ground disturbance (e.g. driving of bridge piles, blasting) within 500 feet of active burrows at any time.
d. No habitat modification (e.g. vegetation removal) within 400 feet of active burrows.
e. No vegetation modification or removal, or construction of permanent barriers (e.g. fences) at any location or time that may disrupt dispersal or movement of PAMB.
f. No vehicular or foot traffic within 25 feet of active burrows, and no alteration of water drainage or hydrology in active burrow areas.

3) DFG will require that the Contract Manager must be notified at least one week in advance of the date on which work will start, so that a qualified DFG biologist can monitor activities at the work site. If the necessary protective measures cannot be implemented at a work site, then no work at the site will occur.

V. CULTURAL RESOURCES

Ground-disturbance will be required to implement the project at some work sites that have the potential to affect cultural resources. This potential impact will be avoided through implementation of the following mitigation measures:

1) DFG will contract with a qualified archaeologist(s) to complete cultural resource surveys at any sites with the potential to be impacted prior to any ground-disturbing activities. Cultural resource surveys will be conducted using standard protocols.

2) If cultural resource sites are identified at a site, DFG will require one or more of the following protective measures to be implemented before work can proceed: a) Fencing to prevent accidental disturbance of cultural resources during construction, b) on-site monitoring by a cultural resource professional during construction to assure that cultural resources are not disturbed, c) redesign of proposed work to avoid disturbance of cultural resources.

3) DFG shall report any previously unknown historic or archeological remains discovered at a site to the U. S. Army Corps of Engineers as required in the anticipated Regional General Permit.

4) If it becomes impossible to implement the project at a work site without disturbing cultural resources, then activity at that work site will be discontinued.

5) DFG shall ensure that the contractor or responsible party is aware of these site-specific conditions, and will inspect the work site before, during, and after completion of the action item.

VI. GEOLOGY AND SOILS

There is no potential for a significant adverse impact to geology and soils; implementation of the restoration project will contribute to an overall reduction in erosion and sedimentation. Existing roads will be used to access work sites. Ground disturbance at most work sites will be minimal, except for road improvements or decommissioning. Road improvements and decommissioning will involve moving large quantities of soil from road fills and stream crossings to restore historic land surface profiles and prevent chronic erosion and sediment delivery to streams. In order to avoid temporary increases in surface erosion, the following mitigation measures will be implemented:

1) Bare soil will be seeded, mulched, and planted as necessary, using best management practices described in the salmonid restoration handbook.

2) Soil will only be compacted to the extent necessary to reduce any surface erosion that may occur in the first heavy rainfall.

3) DFG shall ensure that the contractor or responsible party is aware of these site-specific conditions, and will inspect the work site before, during, and after completion of the action item.

VII. HAZARDS AND HAZARDOUS MATERIALS

The project will not create a significant hazard to the public or the environment. At work sites requiring the use of heavy equipment, there is a small risk of an accident upsetting the machine and releasing fuel, oil, and coolant, or of an accidental spark from equipment igniting a fire. The potential for these impacts will be reduced to a less than significant level through implementation of the following mitigation measures:

1) The contractor shall have dependable radio or phone communication on-site to be able to report any accidents or fire that might occur.

2) Heavy equipment that will be used in these activities will be in good condition and will be inspected for leakage of coolant and petroleum products and repaired, if necessary, before work is started.

3) Work with heavy equipment will be performed in isolation from flowing water, except as may be necessary to construct coffer dams to divert stream flow and isolate the work site.

4) All equipment operators will be trained in the procedures to be taken should an accident occur. Prior to the onset of work, DFG shall ensure that the contractor has prepared a plan to allow a prompt and effective response to any accidental spills. All workers shall be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.

5) All activities performed in or near a stream will have absorbent materials designed for spill containment and cleanup at the activity site for use in case of an accidental spill.

6) All fueling and maintenance of vehicles, other equipment, and staging/storage areas shall be located at least 20 meters from any riparian habitat or water body. The contractor shall ensure contamination of habitat does not occur during such operations.

7) Stationary equipment such as motors, pumps, generators, compressors, and welders, located within the dry portion of the stream channel or adjacent to the stream, will be positioned over drip-pans.

8) All internal combustion engines shall be fitted with spark arrestors.

9) The contractor shall have an appropriate fire extinguisher(s) and fire fighting tools (shovel and axe at a minimum) present at all times when there is a risk of fire.

10) Vehicles shall not be parked in tall grass or any other location where heat from the exhaust system could ignite a fire.

11) The contractor shall follow any additional rules the landowner has for fire prevention.

The potential for mercury contamination is largely predicted by the presence of historic hydraulic gold mines and mercury (cinnabar) mines (California's Abandoned Mines: A Report on the Magnitude and Scope of the Issue in the State, DOC 2000). Therefore, only a few limited areas within the geographic scope of this grant program have any potential for gravels contaminated with elemental mercury, they are: Middle Klamath River, Salmon River, Scott River, and the Lower Middle and Upper Trinity River. (Though studies by the USGS failed to find significant levels of methyl mercury near these mines.) The only other mercury mine contamination within the FRGP-area is in Marin County

(Walker Creek), and this contamination is not in instream gravels or dredger tailings, instead it is from the bedrock; and therefore, not easily methylized, and not as bioavailable.

Given the limited geographical potential for encountering mercury contamination (from historic mining) within the geographic scope, and the limited number of projects within these areas that will either disturb the channel bottom or import gravels for instream restoration; the following avoidance and mitigation measures will be adhered to:

1) Any gravel imported from offsite will be from a source known to not contain historic hydraulic gold mine tailings, dredger tailings, or mercury mine waste or tailings.

2) For work which will disturb the channel bottom (grading and channel dredging) in areas that had historic hydraulic gold mining, or historic mercury mining (as outlined above), pre and post-project testing of macro invertebrate will be done. This testing will consist of:

   a) Prior to project implementation, rapid bio-assessment and a total mercury bioassay of macro invertebrates (total mercury/mg) will be done directly upstream and downstream of the project site;

   b) Immediately following implementation of the project, and for one additional season thereafter (i.e., two sampling events), complimentary rapid bio-assessment and a total mercury bioassay of macro invertebrates (total mercury/mg) will be done directly upstream and downstream of the project site. The results of these studies will be provided to a representative of the SWRCB.

VIII. HYDROLOGY AND WATER QUALITY

1) Work shall be conducted during the period of lowest flow.

2) Work shall be performed in isolation from flowing water. If there is any flow when the work is done, the contractor shall construct coffer dams upstream and downstream of the excavation site and divert all flow from upstream of the upstream dam to downstream of the downstream dam. The coffer dams may be constructed with clean river gravel or sand bags, and may be sealed with sheet plastic. Sand bags and any sheet plastic shall be removed from the stream upon project completion. Clean river gravel may be left in the stream, but the coffer dams must be breached to return the stream flow to its natural channel.

3) For minor actions, where the disturbance to construct coffer dams to isolate the work site would be greater than to complete the action (for example, placement of a single boulder cluster), then measures will be put in place

immediately downstream of the work site to capture suspended sediment. This may include installation of silt catchment fences across the stream, or placement of filter berm of clean river gravel. Silt fences and other non-native materials will be removed from the stream following completion of the activity. Gravel berms may be left in place after breaching, provided they do not impede the stream flow.

4) Before work is allowed to proceed at a site, DFG will inspect the site to assure that turbidity control measures are in place.

X. MINERAL RESOURCES

No specific mitigation measures are required for mineral resources.

XI. NOISE

Personnel shall wear hearing protection while operating or working near noisy equipment (producing noise levels ≥85 db, including chain saws, excavators and back hoes).

XII. POPULATION AND HOUSING

No specific mitigation measures are required for population and housing.

XIII. PUBLIC SERVICES

No specific mitigation measures are required for public services.

XIV. RECREATION

No specific mitigation measures are required for recreation.

XV. TRANSPORTATION/TRAFFIC

The project will not affect transportation/traffic, because erosion control and culvert replacement projects will occur in wildland/rural sites with very little use. There is a potential that culvert replacement at some work sites could temporarily interfere with emergency access. This potential impact will be avoided through implementation of the following mitigation measure at any sites where emergency access might be necessary:

1) During excavation for culvert replacement, the contractor shall provide a route for traffic around or through the construction site.

XVI. UTILITIES AND SERVICE SYSTEMS

No specific mitigation measures are required for utilities and service systems.

MONITORING AND REPORTING

1) DFG Contract Manager will inspect the work site before, during, and after completion of the action item, to ensure that all necessary mitigation measures to avoid impacts are properly implemented.

2) Immediately after completion of each action item, the project details shall be documented as outlined in the latest version of the *California Salmonid Stream Habitat Restoration Manual*, Part VIII. This material as well as project monitoring and evaluation shall be made available to NMFS and USFWS upon request.

3) An annual report shall be submitted to NMFS and USFWS by December 30 of each year, which provides a summary of all restoration action items completed during the previous year. For road rehabilitation and culvert upgrade/removal action items, this report will include information on:

   a) The miles of road decommissioned.

   b) The miles of road made "hydrologically maintenance free."

   c) The number of stream crossings upgraded.

   d) The number of stream crossings removed and an estimate of cubic yards of sediment "saved."

   e) The number of rocked fords constructed.

   f) Documentation of compliance with applicable erosion control measures, including dates of project activities such as ground disturbance and implementation of erosion control measures.

   g) Documentation of compliance with erosion control measures.

   h) Documentation of the presence of listed and/or proposed for listing Pacific salmonids and dates of project activities in relation to potentially impacted life history stages.

   i) Documentation of compliance with NMFS SWR performance criteria for fish passage and storm flow capacity for culverts.

4) Within three years of completion of instream action items accomplished under the anticipated Regional General Permit, DFG will evaluate 10 percent of each project type after at least one, but not more than three winter high flows. Each project type will have 10 percent of the individual projects randomly selected by DFG for evaluation. This evaluation shall be recorded on

standard habitat evaluation forms developed by DFG using procedures described in the "*California Salmonid Stream Habitat Restoration Manual*," Part VIII, Project Monitoring and Evaluation. The annual report to NMFS of completed action items described in number 3 above, shall also summarize the results of all restoration project evaluation completed during the previous year.

5) DFG shall report any previously unknown historic or archeological remains discovered at a site to the U. S. Army Corps of Engineers as required in the anticipated Regional General Permit.